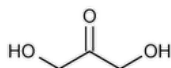


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Dihydroxyacetone



$C_3H_6O_3$ 90.08

1,3-Dihydroxy-2-propanone CAS RN®: 96-26-4; UNII: O10DDW6J00.

DEFINITION

Dihydroxyacetone contains NLT 98.0% and NMT 102.0% of dihydroxyacetone ($C_3H_6O_3$), calculated on the anhydrous basis.

IDENTIFICATION

- **A. SPECTROSCOPIC IDENTIFICATION TESTS (197), Infrared Spectroscopy: 197K**
- **B.** The R_f value of the principal spot of the *Sample solution* corresponds to that of the *Standard solution*, as obtained in the test for *Organic Impurities*.

ASSAY

PROCEDURE

Sample solution: Dissolve 0.1 g of Dihydroxyacetone in 20 mL of water, add 20 mL of 0.1 M periodic acid, and allow to stand at room temperature in the dark for 20 min. Add 3 g of sodium bicarbonate, 20 mL of 0.6 M potassium iodide, and 3 mL of starch TS.

Analysis: Titrate with 0.05 M sodium arsenite VS. Perform a blank titration, and make any necessary corrections. Each mL of 0.05 M sodium arsenite is equivalent to 4.504 mg of dihydroxyacetone ($C_3H_6O_3$).

Acceptance criteria: 98.0%–102.0% on the anhydrous basis

IMPURITIES

- **RESIDUE ON IGNITION (281):** NMT 0.1%

Change to read:

- **▲ IRON (241), Procedures, Procedure 1 ▲** (CN 1-JUN-2023): NMT 0.002%

ORGANIC IMPURITIES

Glycerin solution: 0.25 mg/mL of glycerin in methanol

Standard solution: 50 mg/mL of [USP Dihydroxyacetone RS](#) in methanol

Sample solution: 50 mg/mL of Dihydroxyacetone in methanol

Chromatographic system

(See [Chromatography \(621\), Thin-Layer Chromatography](#).)

Mode: TLC

Adsorbent: 0.25-mm layer of chromatographic silica gel mixture

Application volume: 1 μ L

Developing solvent system: Acetone and water (19:1)

Spray reagent: Toluene, saturated solution of lead tetraacetate in glacial acetic acid, and 1% solution of dichlorofluorescein in alcohol (190:5:1)

Analysis

Samples: *Glycerin solution*, *Standard solution*, and *Sample solution*

Spray the plate with *Spray reagent*, and dry the plate for 5 min at 105°. Examine the plate under short-wavelength UV light, and compare the intensities of the glycerin spot observed in the *Sample solution* with that of the principal spot of the *Glycerin solution*.

Acceptance criteria: 0.5%; the glycerin spot of the *Sample solution* is not larger or more intense than the principal spot of the *Glycerin solution*, and no other secondary spots are observed in the *Sample solution*.

SPECIFIC TESTS

- **pH (791).**

Sample solution: 50 mg/mL in water

Acceptance criteria: 4.0–6.0

- **WATER DETERMINATION, Method I (921):** NMT 0.2%

• LIMIT OF PROTEIN

Sample solution: 250 mg/mL of Dihydroxyacetone in water. Transfer 100 µL of this solution to a 5-mL volumetric flask, dilute with brilliant blue G TS to volume, and mix.

Instrumental conditions

Mode: UV

Analytical wavelength: 595 nm

Blank: 100 µL of water and 5 mL of brilliant blue G TS

Analysis: Determine the absorbance of the *Sample solution*.

Acceptance criteria: NMT 0.400

ADDITIONAL REQUIREMENTS

- **PACKAGING AND STORAGE:** Preserve in tight containers in a cool place.
- **USP REFERENCE STANDARDS (11).**
[USP Dihydroxyacetone RS](#)

Auxiliary Information - Please [check for your question in the FAQs](#) before contacting USP.

Topic/Question	Contact	Expert Committee
DIHYDROXYACETONE	Documentary Standards Support	SM32020 Small Molecules 3

Chromatographic Database Information: [Chromatographic Database](#)

Most Recently Appeared In:

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